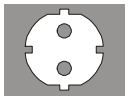


Chapter 1

List of Contents

1 Safety 1

1.1 General Safety Instructions 1
1.2 Safety Instructions for Laser Products 2
1.3 Safety Instructions for Cassette Unit 2
1.4 Safety Regulations 3

2 Preparations before Installation 5

2.1 Inspection of Packing 5
2.2 Unpacking the Components 6
2.3 Checking the Accessory Kit 6
2.4 Removing the Shipping Brackets 7
2.5 Installation of Base Plate 14

3 Controls and Connectors 17

4 Operation Terminal Digitizer 18

5 Requirements for Installation 19

5.1 General 19
5.2 Required Service Programs 19
5.3 Preparations for the Installation 20

6 Installation of the ADC Compact Plus Digitizer 21

6.1 Electrical Connection 21
6.2 Start-up Procedure 22
6.3 Backup of the machine specific Data 24

7 Concluding the Installation 25

7.1 Check the technical Image Quality of the System 25
7.2 Last Steps 28

8 Installation of other ADC System Components 28

9 Checklist for Installation / Machine Start –up ... 29

The **Installation Checklist** in the appendix of this chapter gives an overview of all steps and guides through the complete installation process.

1 Safety

1.1 General Safety Instructions

- The ADC Compact Plus has been designed for scanning medical X-ray image plates and should only be used for these purposes.
- The ADC Compact Plus must only be operated by qualified staff trained on the machine.
- Make sure that the ADC Compact Plus is constantly monitored in order to avoid inappropriate handling, especially by children.
- Only trained service personnel must make repairs. Only authorized service personnel must make changes to the ADC Compact Plus.
- If there is any visible damage to the machine casing, do not start nor use the ADC Compact Plus.
- If you want to connect the ADC Compact Plus with other devices, components or assemblies and if the technical data do not permit determining whether the combination with these devices, components or assemblies involves hazards, you must consult the respective manufacturers to avoid danger for operating personnel or the environment.
- Do not override or disconnect the integrated safety features.
- Switch off the ADC Compact Plus before performing any maintenance work or repairs. Disconnect the ADC Compact Plus from the mains before making repairs or performing any maintenance activities.
- As is the case for all technical devices, the ADC Compact Plus must be operated, cared for and serviced correctly.
- If you don't operate the ADC Compact Plus correctly or if you don't have it serviced correctly, Agfa-Gevaert is not liable for resulting disturbances, damages or injuries.
- When installing the ADC Compact Plus, care must be taken to ensure that there is either a mains plug or an all-cable disconnecting device in the internal installation fitted near the ADC Compact Plus and that it is easily accessible.
- If you notice conspicuous noise or smoke, disconnect the ADC Compact Plus immediately.
- Check that the mains voltage is within the specified range of the self adapting power supply of the machine.

- You can hurt your fingers if they are caught between the ADC Cassette and the edge of the input slot. Insert the cassette in the input buffer as described in the User Manual. At all times, keep your fingers clear of the input slot. As soon as the ADC Compact Plus takes in the cassette, release it.

Warning Label at the Input buffer of the ADC Compact Plus.

1.2 Safety Instructions for Laser Products

The ADC Compact Plus is a class 1 Laser Product. It uses internally a 2 x 50mW laser diode, classification class IIIb.

Under normal operating conditions - when both doors are closed - there can be no laser radiation outside the ADC Compact Plus. It is nonetheless imperative that the local radiation safety regulations regarding the protection of staff against scattered radiation are complied with, if the ADC Compact Plus is located in the immediate vicinity of an X-ray room.

Open the front left and right door only to solve cassette or image plate jams. When you open either of the doors, the power supply of all critical components is switched off automatically as a precaution.

User interventions other than those described in this manual can be hazardous with regard to laser radiation.

1.3 Safety Instructions for Cassette Unit

The Rotation drive of the Cassette Unit turns very fast!

Keep away when machine is run with doors opened (e.g. for repair, maintenance).

1.4 Safety Regulations

Installation Regulations

Electrical installations in the installation room must be in compliance with:

- IEC 60364 (e.g. for Germany: VDE 0100) regulations for Europe,
- NEC for USA / Canada.

Prior to any electrical installation , the local regulations for electrical installations have to be consulted as well.

A ground fault circuit interrupter (GFCI) is recommended, but not compulsory.

Mains Connection

Connection via plug and socket.

Certificates

- The ADC COMPACT Plus Digitizer is in compliance with EG regulation 93/42/EEC (Medical device).
- The ADC COMPACT Plus Digitizer is tested in compliance with:
  - IEC 60950/EN 60950: 1992; A1: 1993; A2: 1993; A3: 1995; A4: 1997
  - IEC 601-1-1
  - EN 60601-1
  - EN 60825-1:1994 + A11:1996
  - UL1950; CSA 22.2 No.950
  - UL2601
  - The ADC COMPACT Plus Digitizer is UL / CUL classified.
    - E166741

Radio Interference Suppression

It is hereby certified that the ADC COMPACT Plus Digitizer has interference suppression according to EN 55011: 1998 Class B as well as FCC Rules CR47 Part 15 Class A (North-America).

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in an residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

2 Preparations before Installation

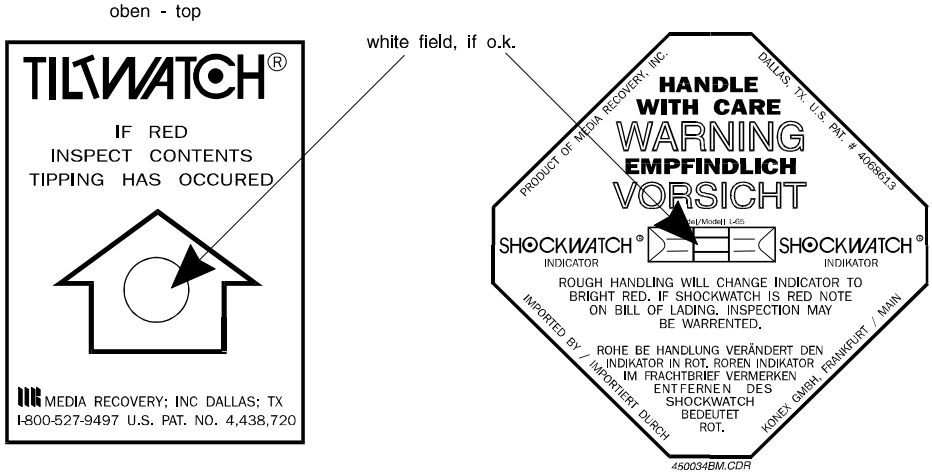
2.1 Inspection of Packing

The following actions should be taken upon delivery of the system components, preferably by the customer:

- Completeness check of the shipment by means of the bill of material (number of pallets).
- Comparison of the labels on the boxes with the customer's order list and the shipping papers.
- Checking of the packing material for visible transport damage such as
  - dented edges
  - damage on the box
  - torn fixing elements (metal straps, screws).

In case of damage visible from the outside turn to your local AGFA representative.

- Checking of the attached safety indicators on the packing boxes.



If the machine was tilted, the arrow head in the circle of the TILTWATCH changes from white to red.

If the machine was subjected to shocks, the square field in the middle of the SHOCKWATCH changes from white to red.

2.2 Unpacking the Components

The following actions should be taken by the forwarder upon delivery of the system components.

- Removal of the outer packing material.

The individual boxes inside must not be opened by the forwarder.

- Taking out the accessories or boxes and storing them in a safe place.
- The ADC Compact Plus must be taken off the pallet and transported to the installation site.
- Disposal of the packing material.

For unpacking the machine, an area of minimal 200 x 350 cm is required. For lifting the machine off the pallet an area of minimal 100 x 500 cm is required.

If the available space at the installation site is limited, the machine can be unpacked beforehand and rolled to the installation site.

2.3 Checking the Accessory Kit

The following actions have to be done by the FSE (Field Service Engineer) at the customer site.

- Checking the scope of delivery:

Compare the inventory of every component with the **packing list** which specifies the complete scope of delivery.

Pieces	Description
1	ADC Compact Plus Digitizer
1	Base plate
1	Installation Instructions
1	Installation Report
1	ADC Compact Plus user manual information
1	Certificates
6	Floppies
1	Cu-Filter
1	UTP network cable (2 x RJ45 connection)
1	Allen key, size 8
1	Test image CD
1	Connection cable (3 core I-2500-S)
1	Connection cable (Hospital Grade)
2	Adjustable bases, riveted

2.4 Removing the Shipping Brackets

Remove all cushioning parts and shipping brackets prior to first operation.

Removing screws securing the doors

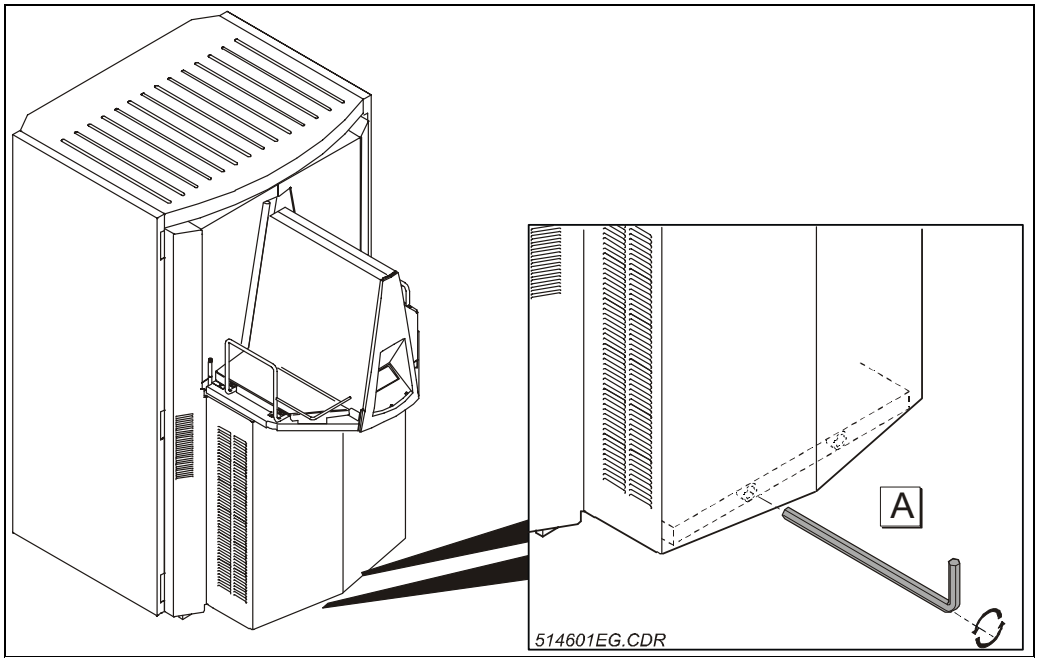


Figure 1

A: Unscrew the locking screws at the front of the digitizer.
(8mm Allen key, extension included in accessory kit)

- Then open the doors of the digitizer.

Removing shipping brackets of cassette unit

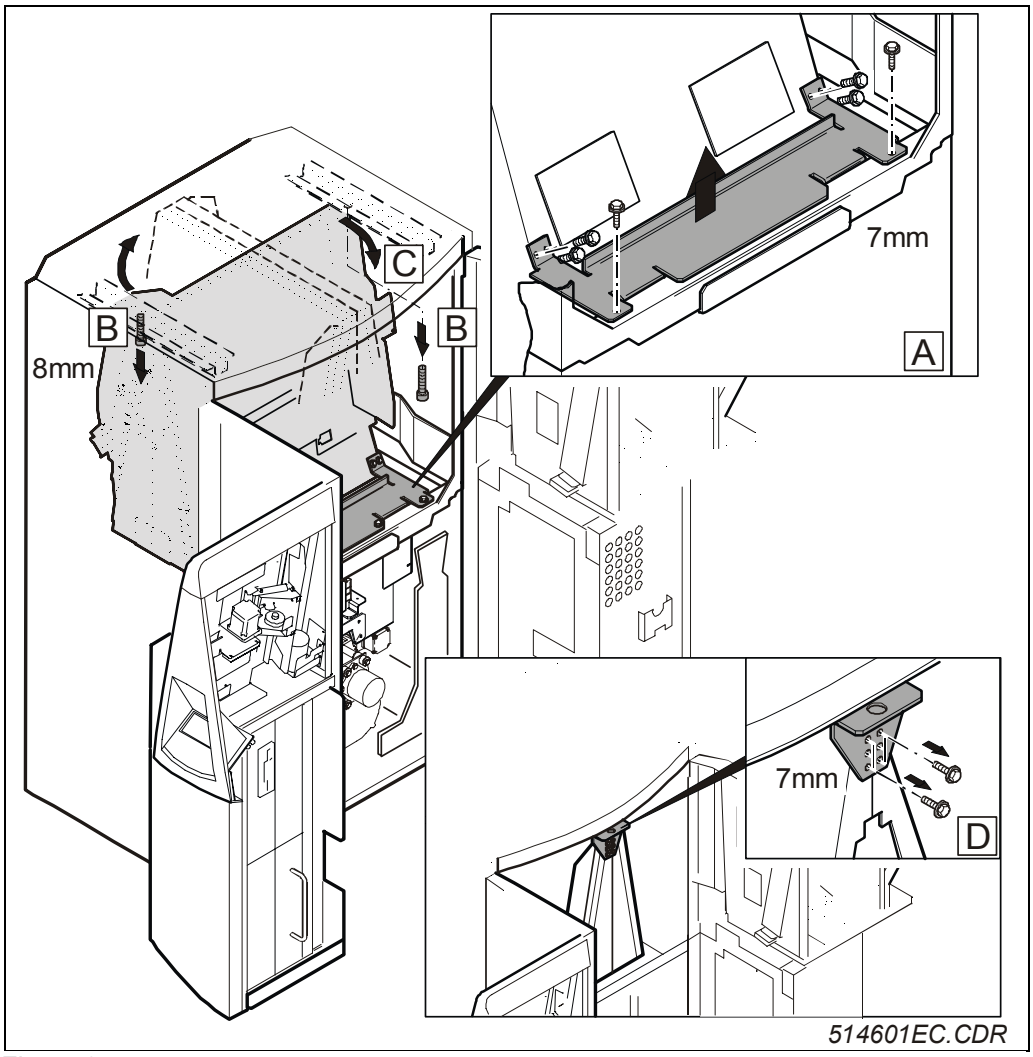


Figure 2

A: Remove the metal plate (6 screws, 7mm socket wrench)

B: Unscrew the cassette unit from the frame (2 screws, 8mm allen key)

C: Turn the cassette units through 90°

D: Remove the two metal brackets (6 screws on the front and rear side of the cassette units, 7mm socket wrench)

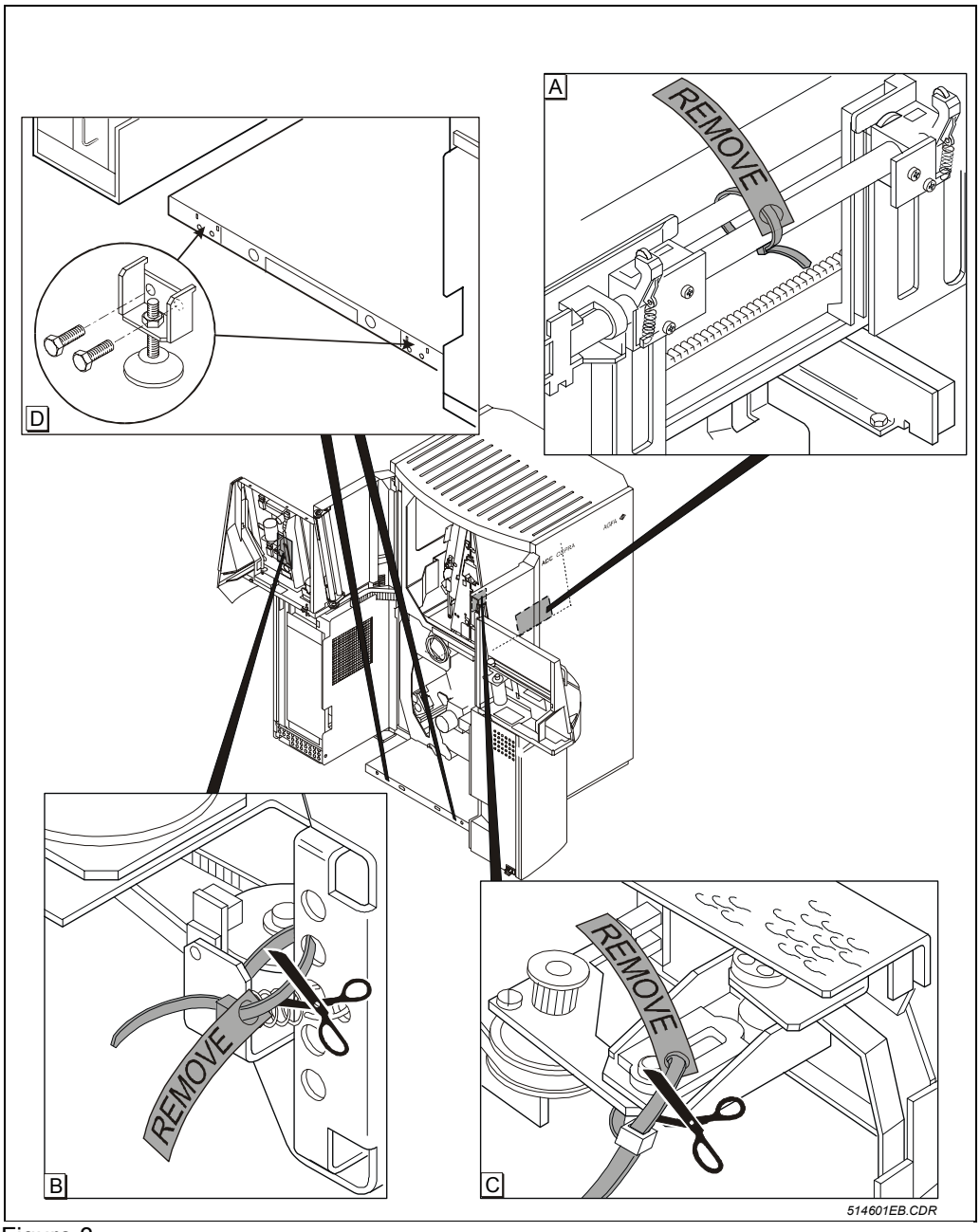


Figure 3

A: Cut the cable tie on both cassette units.

B: Cut the cable tie on the deflector of the output buffer.

C: Cut the cable tie on the feed gate of the input buffer.

D: Screw on the two adjustable bases (7mm socket wrench).

Removing shipping brackets of transport units

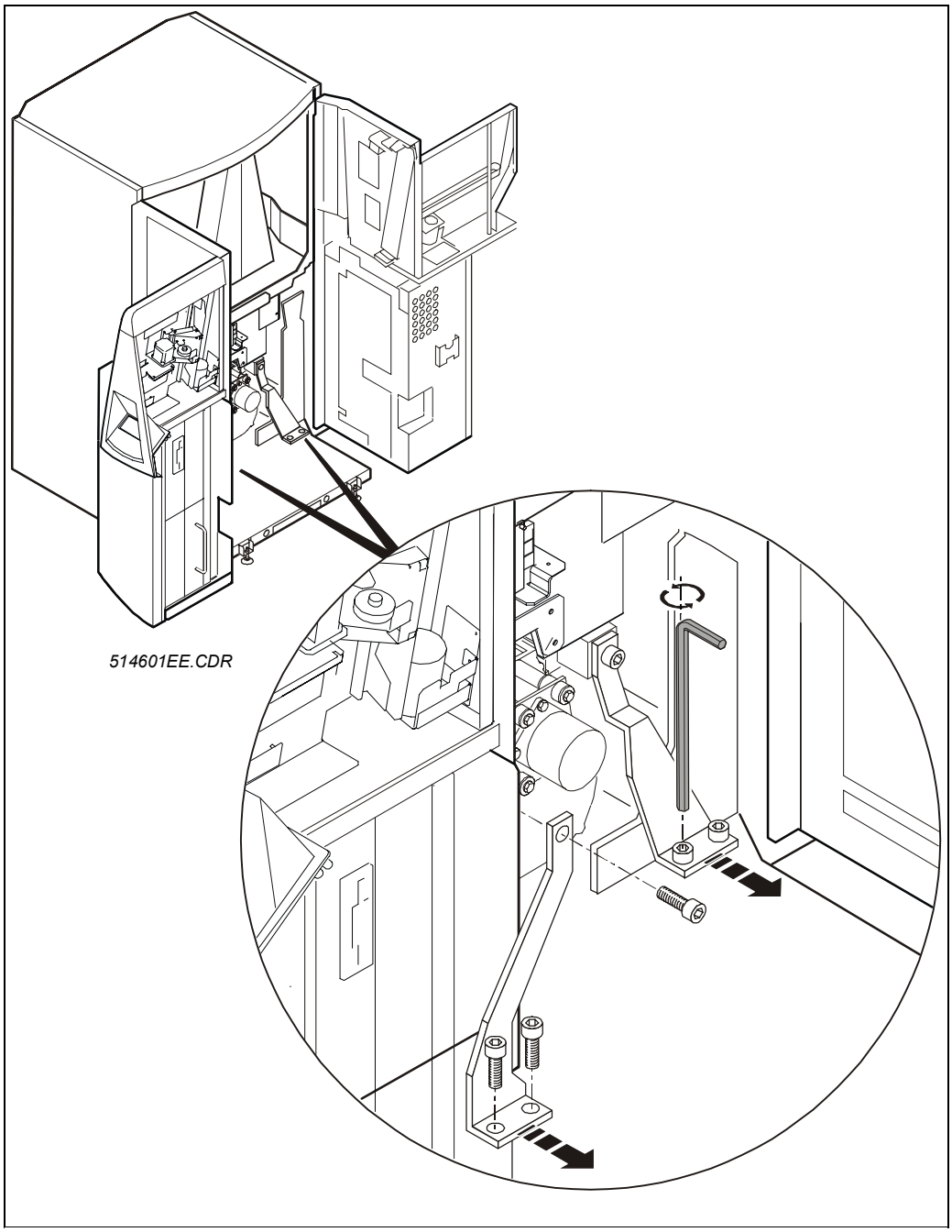
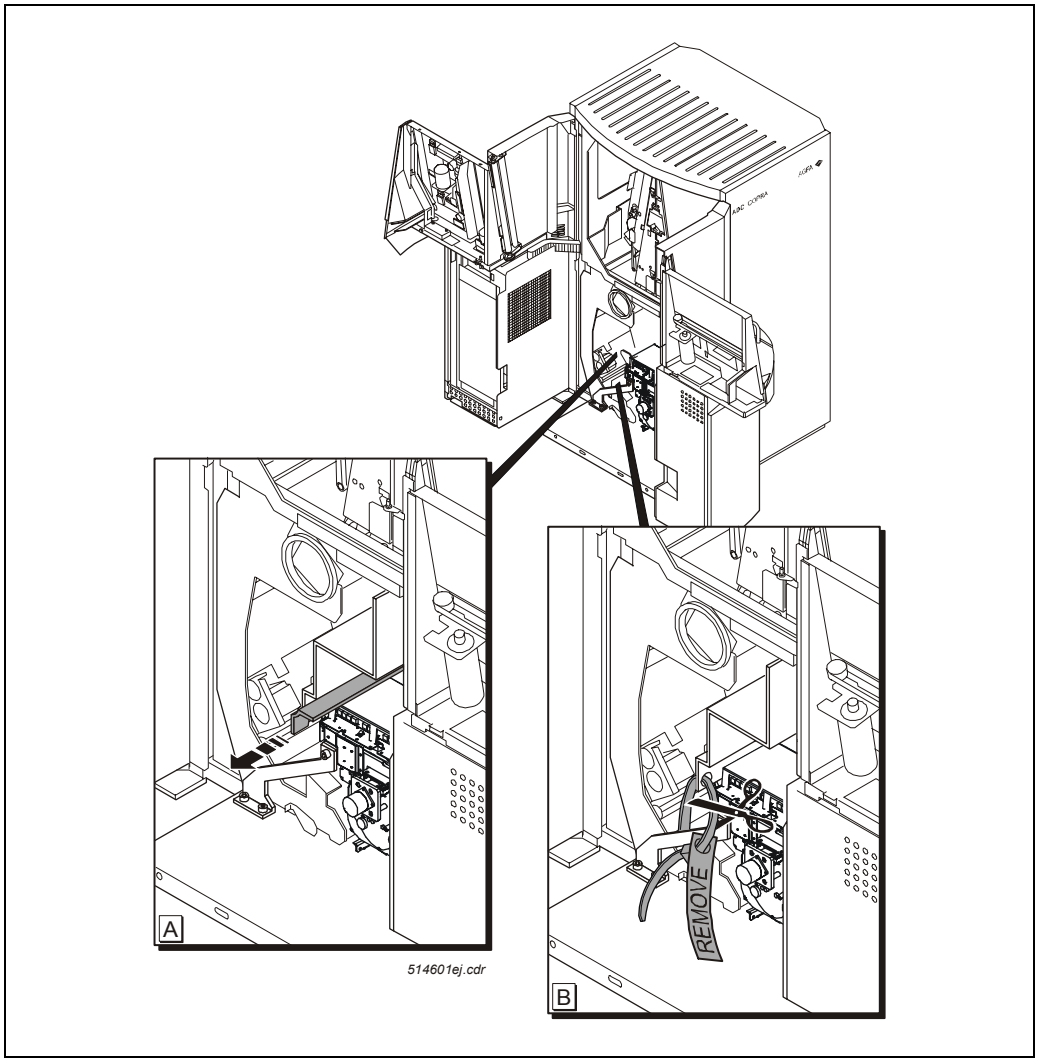


Figure 4

- Unscrew two metal plates (6 screws, 8 mm Allen key)



A: Remove the cushioning block between IP –transport unit postscan and scan unit (hardly visible).

B: Cut and remove the cable tie.

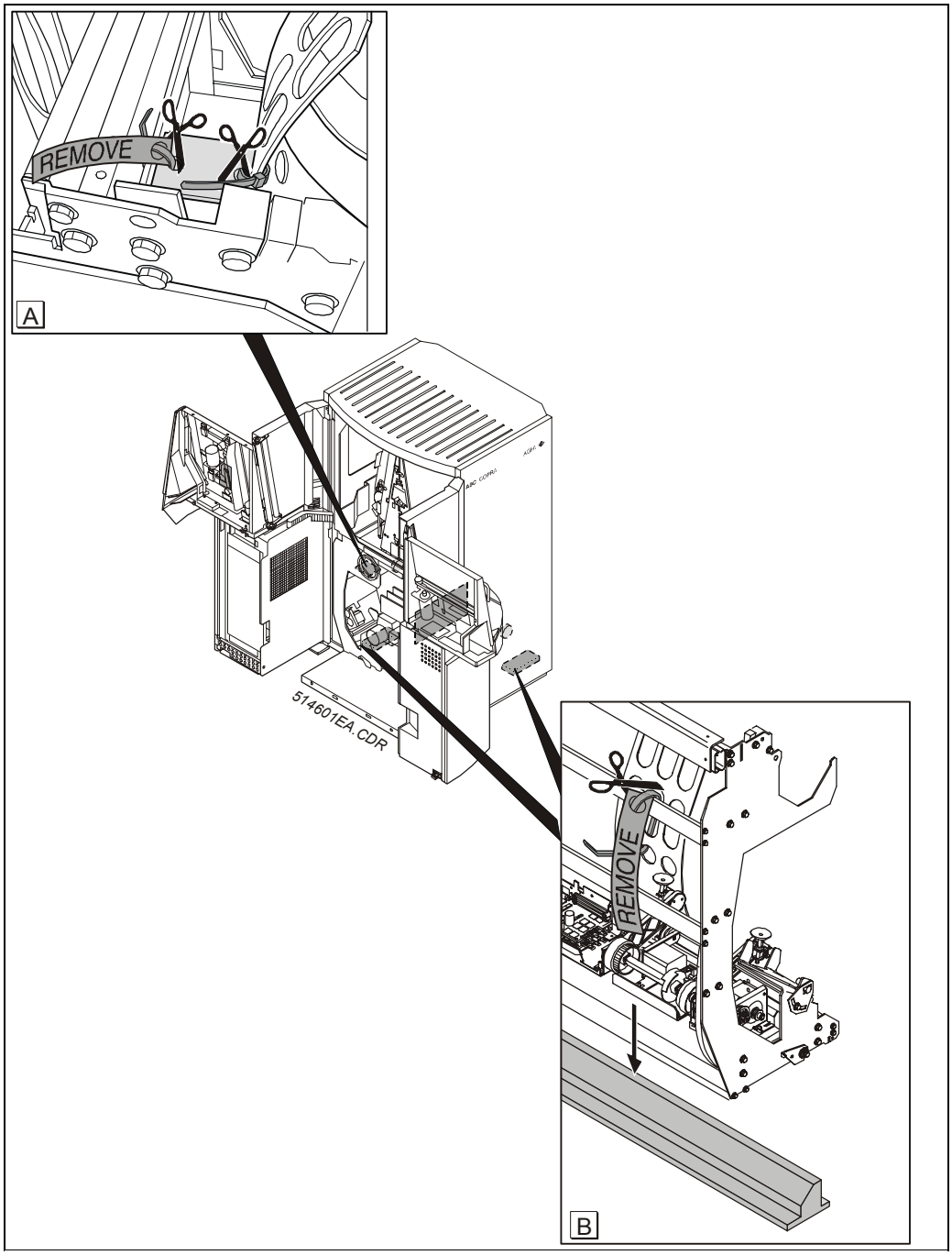


Figure 5

Unplug the two cables at both IP transport units.
Loosen screws at the securing bar, then press securing bar down to

A: Slide out the IP – transport unit left (postscan), cut the two cable ties and remove the plastic plate.

- Slide out the IP – transport unit right (prescan)

B: - Remove the polystyrene blocks from both transport units very cautiously.

Removing shipping brackets from the scan unit

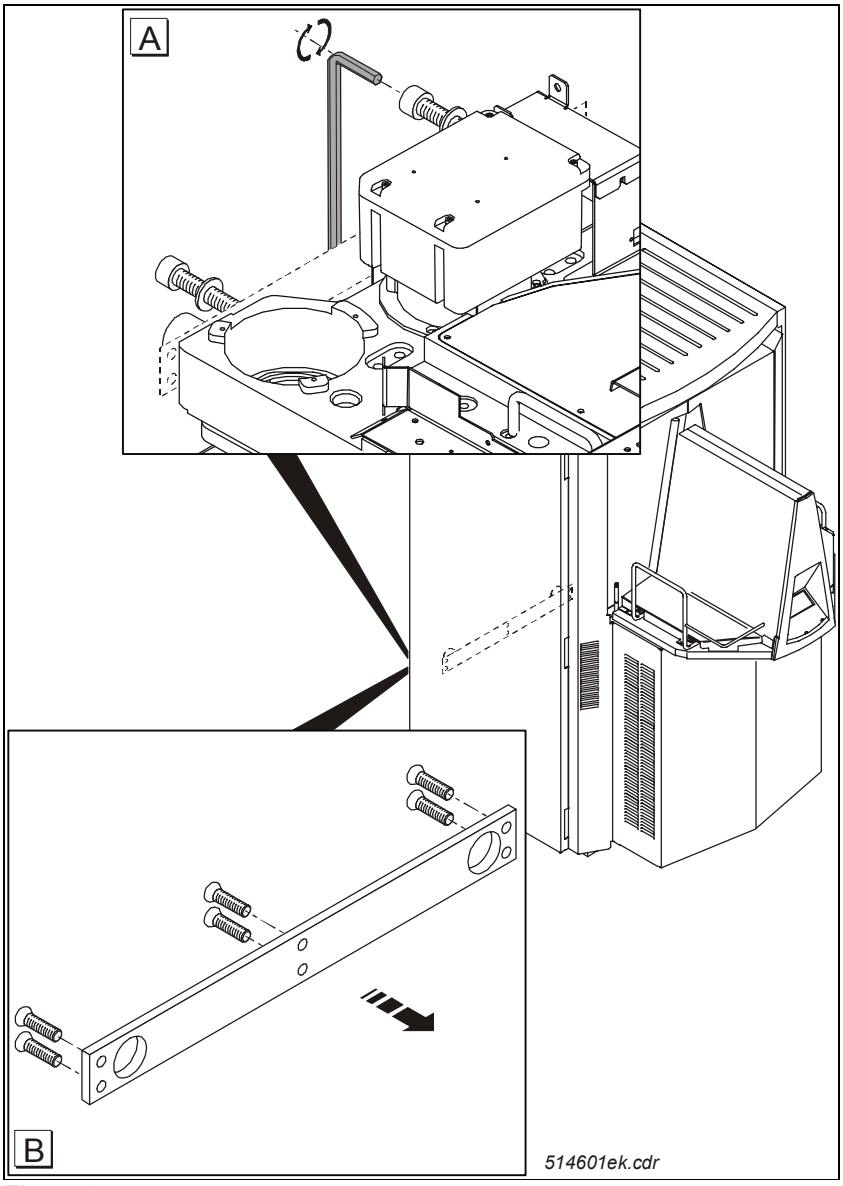


Figure 6

A: Remove the two allen screws at the rear of the machine securing the scan unit.

B: Mount the light tight tin plate (included in accessory kit) by fastening six Phillips screws.

Remove the polystyrene blocks jammed at the feed- and exit rollers of the scan unit (2 pieces).

2.5 Installation of Base Plate

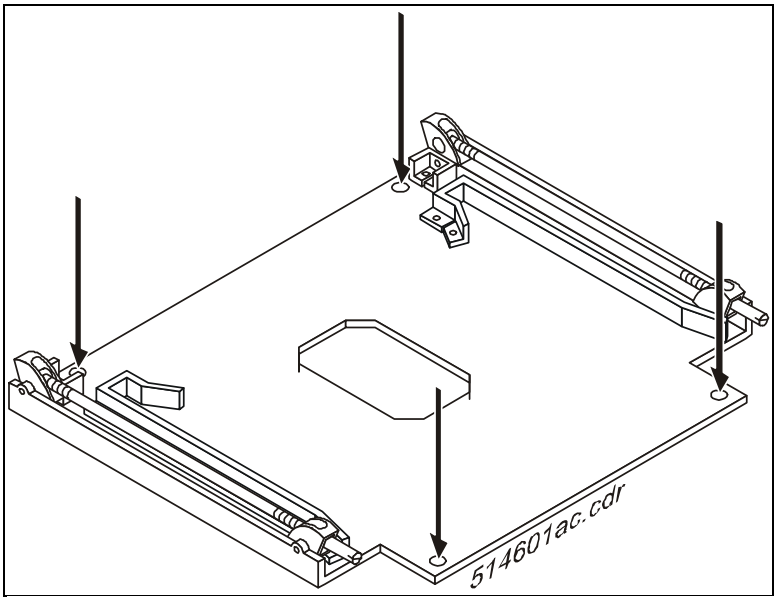


Figure 7

A: Mount the base plate with four screws on the floor (recommended, but not mandatory), see arrows.

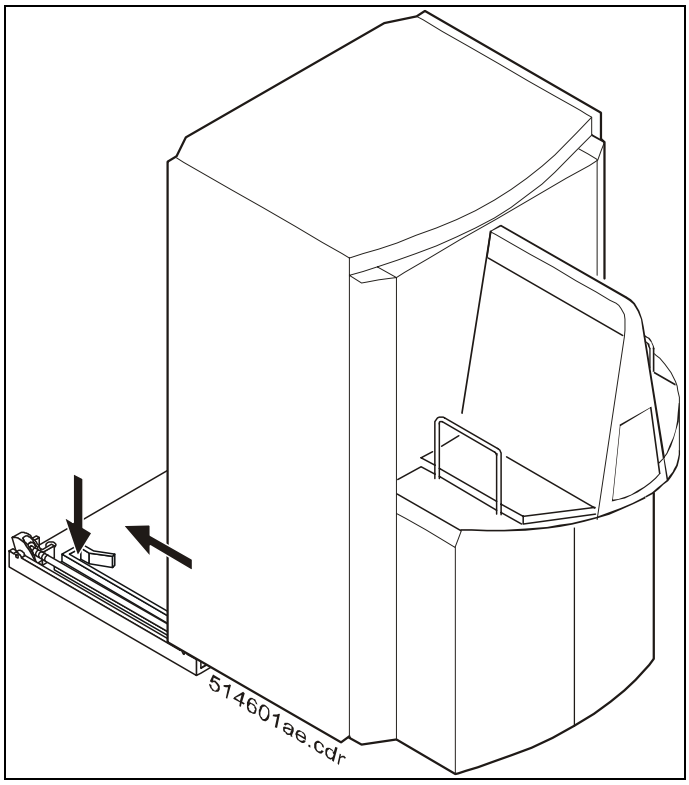


Figure 8

B: Move the digitizer onto the base plate. Take care that the rollers are guided by the rail!

C: Move the rollers of the digitizer gently to the stop (see circle)

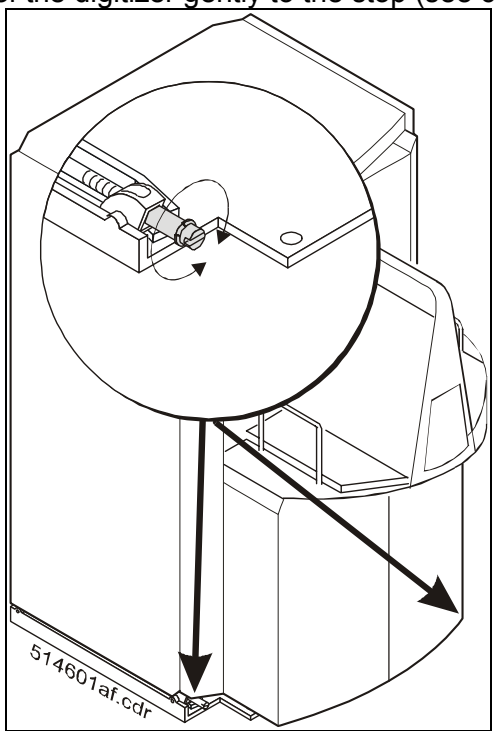


Figure 9

D: Turn screws (on both sides, left and right) by hand to their stop, then screw it in one more turn. Do not give more turns!

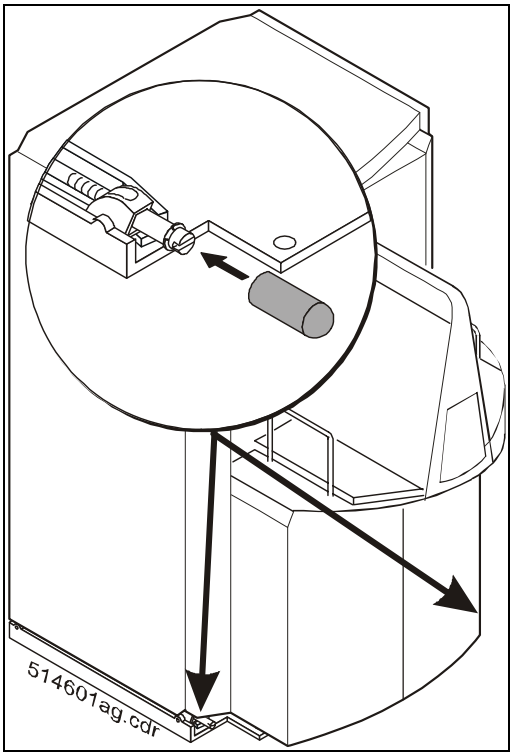


Figure 10

E: Put the plastic caps on the screws to protect them.

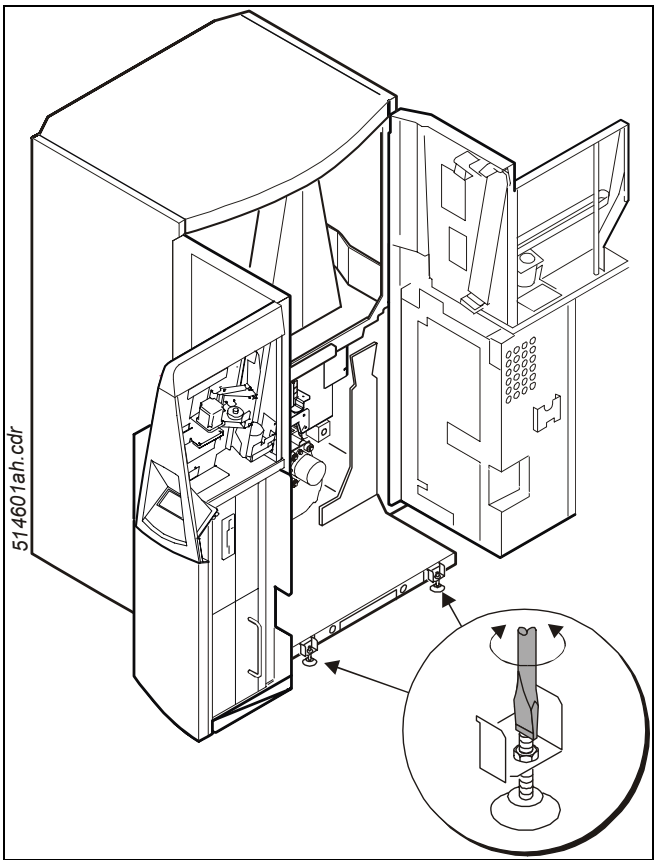


Figure 11

F: Adjust the two bases (7 mm socket wrench)

3 Controls and Connectors

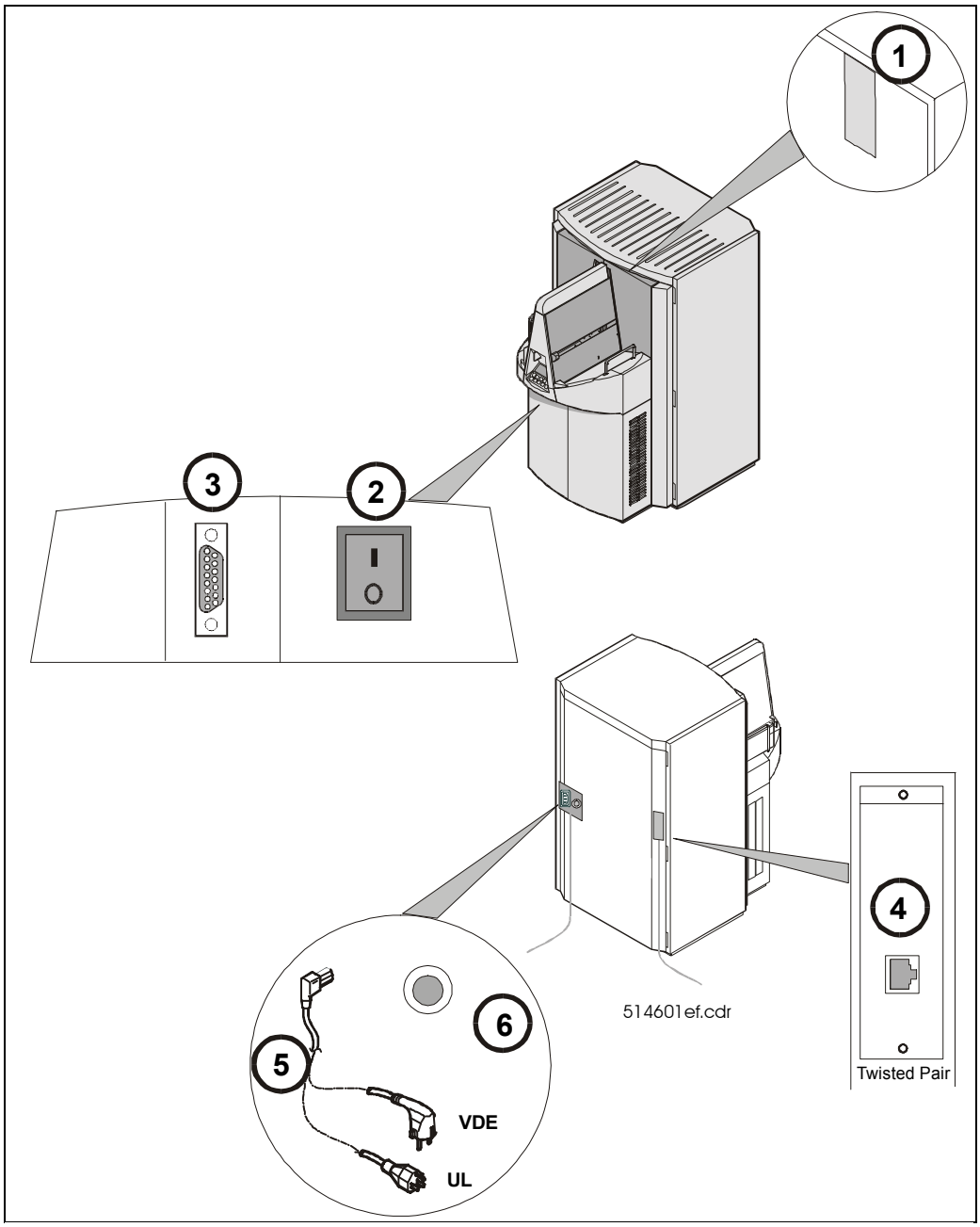
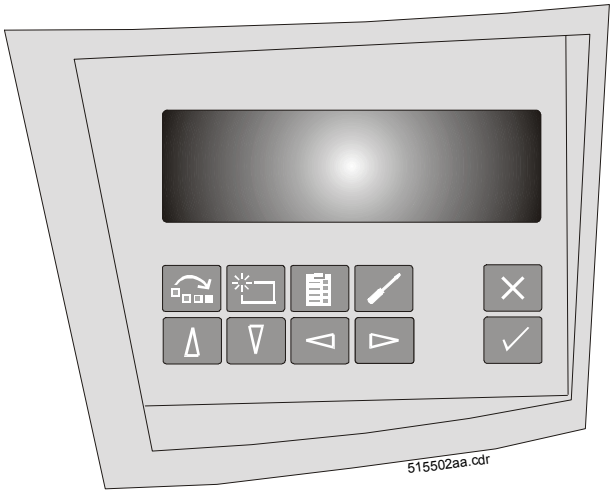


Figure 12

1. Status indicator
2. Line switch Digitizer
3. Port (RS 232 - 25-pin D connector, female D) for the Service PC
4. Network connection (Twisted Pair)
5. Mains cable VDE/UL
6. Grounding cable connection

4 Operation Terminal Digitizer



Display Functions

The key operator level is intended to be used by the normal operator. He uses the system only to produce diagnostic usable images without the requirement for special technical skill or background.

Key	Function	Key	Function
	• Gives an image the status of emergency when sending it to the Processing Station		• Starts erasing images without scanning them
	• Provides access to advanced key-operator functions		• Gives access to service level functions • Exits the service level
	• Quits the current function, exits a menu without saving modifications • Exit from key-operator mode and service level		• Confirms the keyboarded input • In case of some non-fatal errors, confirms that you have noticed this state • Proceeds with the Digitizer operation when "LOCKED" condition has occurred.
	• Moves the cursor one position up to previous edit field • Scrolls upwards or increments digits in a numeric entry field		• Moves the cursor one position down to next edit field • Scrolls downwards or decrements digits in a numeric entry field
	• Scrolls backwards through multiple choices within a field • Moves the entry position in a numerical field in descending order (from right digit to left digit) and toggles between values in a field		• Scrolls backwards through multiple choices within a field • Moves to entry position in a numerical field in ascending order (from left digit to right digit) and toggles between values within a field.

5 Requirements for Installation

5.1 General

Preconditions

- finished preinstallation
- the digitizer is at its installation site

You have to distinguish between the integration into an independent, pure ADC Network (1Digitizer, 1 Processing Station, 1 Preview/ID Station) and the integration into an existing network. When integrating the digitizer into an existing network, it is necessary to create a CPF– file **beforehand** (see Chapter 11, Installation Planning, checklist). With a pure ADC Network, the shipment configuration can be used.

5.2 Required Service Programs

The following Software has to be installed on:
- your Service PC or
- the PC of the ID / Preview -Station.

5.2.1 CCM-Tool

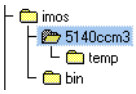
The latest version of the CCM - Tool can be downloaded from MedNet.
The CCM - Tool is needed to create and modify the configuration file (adc.cpf) for the ADC Compact Plus and the other ADC System Components.

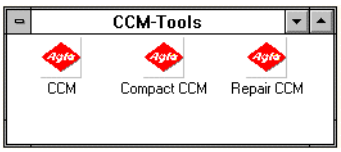
If there is already a previous version installed on your Service PC, please remove the complete directory as well as the icons.

Installation:

- install by executing "setup.exe"

The CCM Tool will be installed in directory "IMOS" or any directory of your choice.





5.2.2 Error Message Program

The "SHOW ERROR PROGRAM" with the "ERROR.MSG file" translates the ADC Compact Plus error codes into clear text.
The "SHOW ERROR PROGRAM" is a part of IMOS, the "ERROR.MSG file" is loaded in the Digitizer.

5.3 Preparations for the Installation

The following work should be performed **before** the system components are installed:

- Laying of the network cables (Ethernet).
- Creation and Adaptation of the configuration file adc.cpf, together with the application specialist.

We recommend, to create and adapt the configuration file adc.cpf, which is used by all ADC System Components, before starting the installation. This allows you a smooth installation.

For detailed information see ADC System Components, DD+DIS198.00E, chapter 6.2.

6 Installation of the ADC Compact Plus Digitizer

6.1 Electrical Connection

6.1.1 Connecting the Power Cord

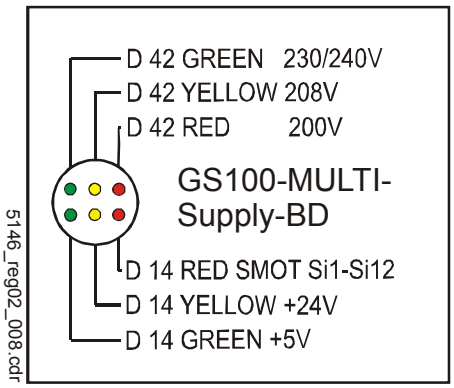
ADC Compact Plus comes with a UL and a VDE power cord.

- Connect the power cord to the machine and to the power supply.

6.1.2 Voltage Adjustment

ADC Compact Plus has an automatic voltage selector.
Voltage is adapted automatically as soon as the machine is switched on.
The selected voltage is displayed on a LED at the inner side of the right door.

- Check the correct voltage by means of the LEDs.



6.2 Start-up Procedure

6.2.1 Mechanical Start-up

ADC Compact Plus must not be connected to a network during the start-up process.

Mechanical Start-Up

Start-Up:

1. Switch on the digitizer.
2. Check the operation terminal during the initialization.
   While booting for the first time, the message
   `<Installation not yet confirmed>` appears.
3. Confirm with OK.
4. After a successful start-up `<ready>` appears.
5. Check/adjust **date** and **time** in key operator mode.
6. Choose **terminal language** in the service menu
   `<Configure>`
   `<User terminal language>`
7. Store the modified machine-specific data.

Check:

8. Open the service menu
   `<Maintenance>`
   `<Handling Cycle>`
   and check the function of cassette- and plate operation with the machine open. Each size should run at least one time.
9. Erase all image plates.

End of Mechanical Start-Up (approx. 30 min.)

In case of any problems during the installation, consult chapter 3.3 (Troubleshooting)

6.2.2 Integrating ADC Compact Plus into an independent, pure ADC Network

Pure ADC Network (minimum configuration)

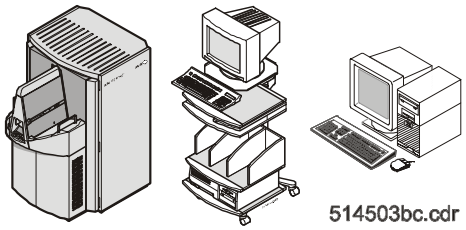
- 1 ADC Compact Plus digitizer
- 1 Processing Station
- 1 Preview/ID Station

In this case the ex factory settings for the ip- address (adcc1 192.9.200.199) are being used.

A new configuration of the machine **is not** required.

Measures:

- Connect the Ethernet.



The Digitizer is now integrated to the Network (approx. 15 min)**.**
Proceed with 6.2.4

6.2.3 Integrating ADC Compact Plus into an existing Network

In this case the ip-address has to be adapted to an existing network. This happens by means of the cpf–file created beforehand.

Integrating into Existing Network

1. Insert the floppy disk with the configuration file ” adc.cpf”.
2. Select:

```
<Install from floppy>
   <cpf-File>
```

3. Choose a name suggested on the display.
4. Follow the online instructions.
5. Connect ADC Compact Plus to the Ethernet.

The Digitizer is now integrated into the Network (approx. 15 min)**.**
Proceed with 6.2.4

The cpf – file has to be installed on every device of the system.

6.2.4 System Check

Precondition

The destinations, i.e. Processing Stations, intended for the digitizer, have to be put into operation and must be obtainable via Ethernet.

System Check

1. Check whether the Processing Station(s) is/are obtainable.
   Service menu:
   `<Checks>`
   `<Check destinations>`
2. Send a test image to the Processing Station(s).
   Key operator menu:
   `<Send test image>.`

End of System Check (approx. 5 min).

6.3 Backup of the machine specific Data

- Do not use the factory backup!
- A new backup is not compatible with older software!

Backup

1. Insert a new formatted floppy.
2. Start the service program.
3. Select:
   `<save on floppy>`
   `<Machine specific data>`
4. Start the backup procedure.
5. Label the floppy as follows:

S/N:	<XXX>
Date:	<date>
Software-version:	ACP_xxxx

End of Backup (approx. 15 min).

7 Concluding the Installation

7.1 Check the technical Image Quality of the System

The hard disk of the digitizer contains three samples showing the minimal required image quality (2x flatfield, 1x testsheet).

One testsheet for quality comparison and two flatfields (Banding, Calibration) can be sent to a printer via Service-Menu

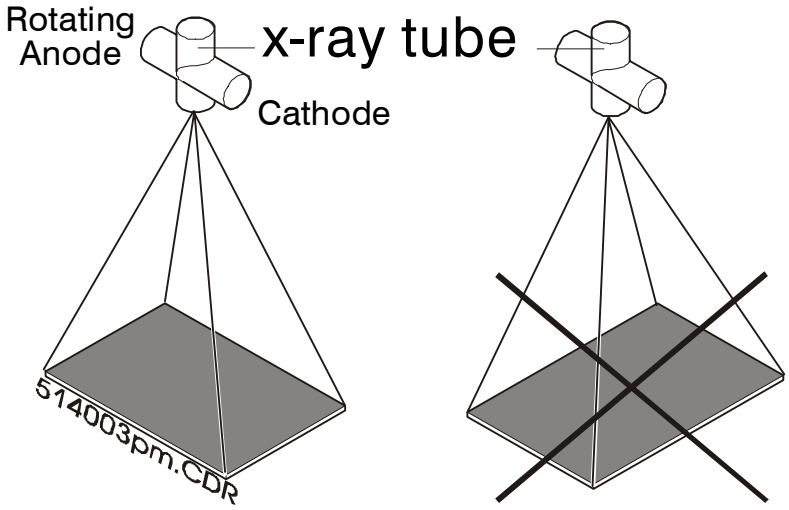
```
<CHECKS>
        <SEND FLATFIELD>
        <SEND TESTSHEET>
```

Compare the samples with the images created by yourself.

7.1.1 Exposure and Evaluation of a Flatfield

- Expose a gray field (flatfield) and evaluate the image on the Processing Station and the Laser printer.
  Criteria: homogenous field, stripes etc.

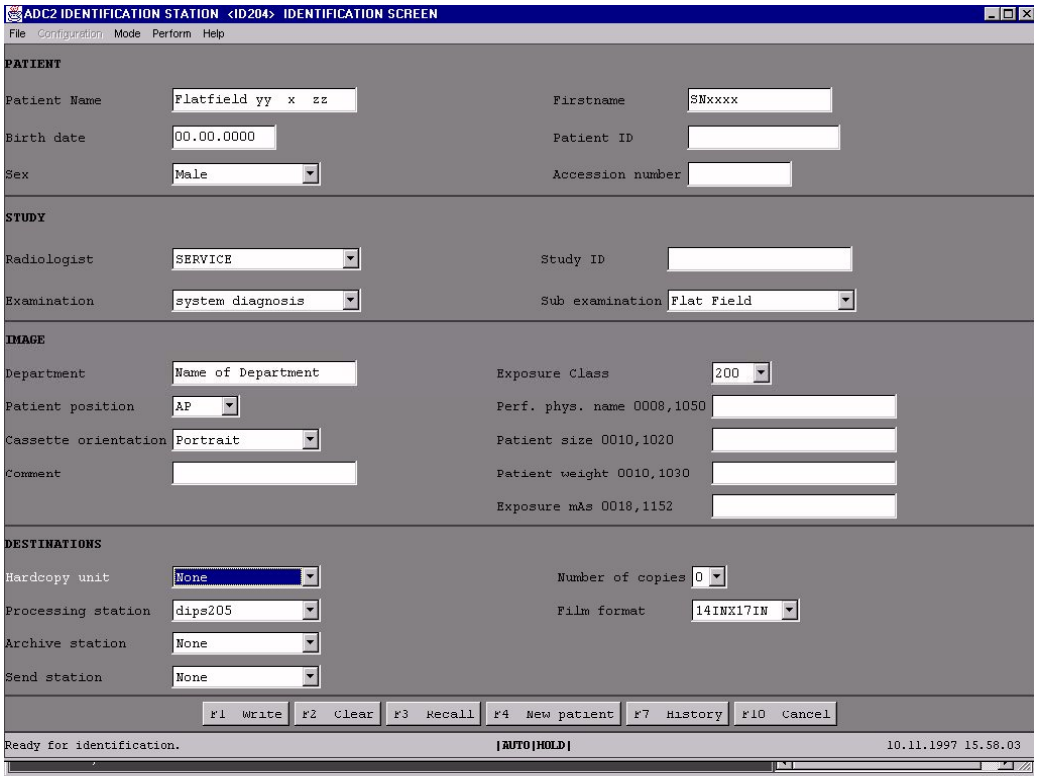
- Have a new plate of every format exposed twice as follows:



For exposure place the cassette in length direction to the X-ray tube see figure above.

- 1st exposure: Doses:
  20 mAs-77kV-1.3 m distance,1.5 mm Cu filter
- Turn cassette through 180°.
- 2nd exposure: parameters as in 1st exposure.

- Identify the cassette on the ID Station as follows:



-select in the field Examination: <**system diagnosis**>
-select in the field Sub-examination:<**Flat field**>
-confirm the Exposure class: <**200**>

- Insert the cassette into the Digitizer. Print the image on a printer with a window setting of 0.6 without changing the level setting on the Processing Station.
- Check plates for running askew with a test sheet.

7.1.2 Exposure and Evaluation of a Test Sheet

- One Testsheet for quality comparison can be sent to a printer via Service-Menu

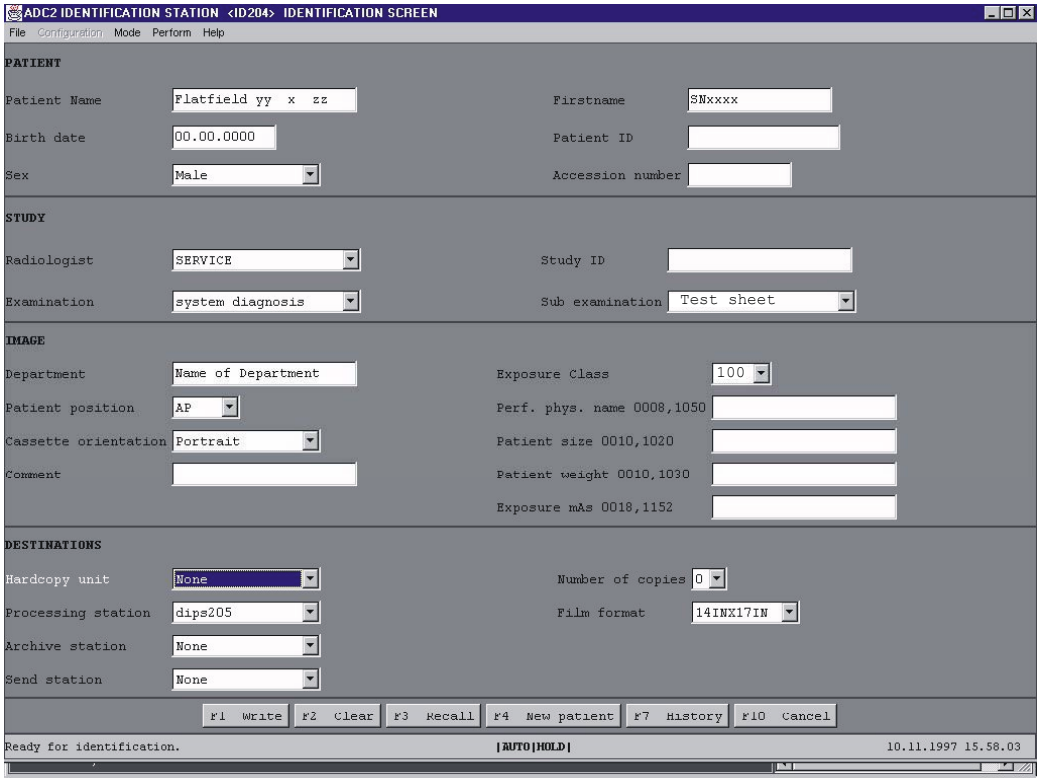
  <CHECKS>

  <SEND TESTSHEET>

- Print the testsheets via Processing Station (window 0.6).
- Insert a test sheet (CM+7.8966.1235.0) into the cassette and expose with the following parameters:

  10 mAs - 77 kV - approx. 1,3m distance .

- Identify the cassette on the ID station as follows:



-select in the field Examination: <**system diagnosis**>
-select in the field Sub-examination:<**IDP Testsheet**>
-confirm the Exposure class: <**100**>

- Insert the cassette into the DIGITIZER. Print the image on a printer with a window setting of 0.6 without changing the level setting via Processing station

- Evaluate the developed images as follows.

  Compare the prints of the samples with your test sheets on a lightbox. The quality of your own testsheet has to reach at least the quality of the samples.

After having finished the test, it is strongly recommended to delete the test sheets on the hard disk of the Processing Station.

- Proceed according to the subsequent evaluation criteria:

7.1.3 Evaluation Criteria

Banding

Fine white or gray lines in fast-scan direction

Aim: No lines visible or effect revealed less than on sample

Quality less than sample: Contact Support center

NOTE: Fine white or gray lines can also appear, if there is dust on the scanner - use the scan-brush for cleaning the scanner.

Calibration / Shading Calibration

Dark lines or stripes in slowscan direction

Aim: No lines visible or effect revealed less than on sample

Quality less than sample: Check / adjust the position of the laser beam via the fiber optics Expose a new flatfield and compare it with the sample.

Quality still less than sample: New calibration - Expose a new flatfield and compare it with the sample.

Quality still less than sample: Contact Support center

Testsheet

Straight vertical lines occur frayed on the test sheet (Jitter effect)

Aim: proper straight lines without jitter

Quality less than sample:

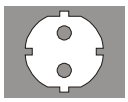
Change optic module

7.2 Last Steps

- Dispose of all packing material. (depending on the country, by the forwarding agent or by the hospital).
- Complete the Installation Report (enclosed to every device) for all system components and forward it to the regional CSO Manager.
- Fill in the enclosed form "Site and System Data" and send it to MI CSO, if not done yet.
- Hand over the ADC System to the application specialist.

8 Installation of other ADC System Components

For detailed information on the installation of other ADC System Components like Processing Station or ID –Station, see:
ADC System Components, DD+DIS198.00E, Chapter 3.



9 Checklist for Installation / Machine Start –up

No.	Step	Task Code	OK
	Before Installation		
1.	Confirm installation prerequisites	INS	❒
2.	Check consignment of all devices for damage and completeness	INS	❒
	PRID-Station Installation and Start-up		
3.	Position PC and ID-tablet	INS	❒
4.	Connect power cords, monitor, keyboard and mouse	INS	❒
5.	Connect ID-tablet (RS232 serial connection to PC and power cord).	INS	❒
6.	Set in Windows NT: regional settings	INS	❒
7.	Set in Windows NT: time and date	INS	❒
8.	Set in Windows NT: network settings	INS	❒
9.	When first time starting the PRID application: fill in the site data screen	INS	❒
10.	Load the cpf-file	INS	❒
11.	Connect the PC to the network	INS	❒
12.	Reboot the PC and start the PRID application again	INS	❒
13.	Do a few test identifications	INS	❒
14.	Reset Infocounters	INS	❒
15.	Repeat step 1 – 13 for each PRID-Station	INS	❒
16.	Check initialization of all cassettes; if required re-initialize them	INS	❒
	Processing Station installation and start-up		
17.	Unpack, check consignment for damage and completeness	INS	❒
18.	Position Processing Station	INS	❒
19.	Connect power cords, monitor, keyboard, mouse, DAT-Drive and optional devices (image disks, UPS)	INS	❒
20.	When first booting: fill in the site data screen	INS	❒
21.	Load in Maintenance Menu: cpf-file	INS	❒
22.	Set in Maintenance Menu: network settings	INS	❒
23.	Connect Processing Station to the network	INS	❒
24.	Check basic functions like receiving, printing sending, viewing images	INS	❒
25.	Reset Infocounters	INS	❒
26.	Create a site specific backup	INS	❒

No.	Step	Task Code	OK
	Digitizer Installation and Start-up		
27.	Remove shipping brackets and install base plate	INS	❒
28.	Connect the power cord	INS	❒
29.	When first booting: Confirm installation with OK	INS	❒
30.	Check date and time in key operator mode	INS	❒
31.	Choose terminal language in service menu	INS	❒
32.	Make a backup of the machine specific data	INS	❒
33.	Check the mechanic components Perform a "Handling Cycle" to check the function of IPs and cassettes	INS	❒
34.	Erase all image plates	INS	❒
35.	Network Integration load the adapted configuration file adc:cpf select a station name for the digitizer from the display make a backup of the machine specific data connect the digitizer to the Ethernet	INS	❒
36.	System Integration - check whether the Processing Station is obtainable: **<Checks> <Check destinations>**; - send a test image to Processing Station: "Send test image" in key operator menu	INS	❒
37.	Check the image quality send flatfield and testsheet to a printer: **<Checks> <Send flatfield>** **<Send testsheet>** expose two flatfields (calibration and banding) and a testsheet print flatfields (calibration and banding) and testsheet, compare and evaluate the printouts	INS	❒
38.	Check "Fast Preview" option, if activated		
	ADC Compact/Solo – entire system		
39.	Perform system test with practical exposures	INS	❒
40.	Hand over the ADC system to the application manager	INS	❒
41.	Fill in the form "Site and System Data" and send it to MICSO	INS	❒
42.	Send the completed "Installation Reports" to the regional CSO manager	INS	❒
	Remote Access		
43.	Make connection to Service Host	INS	❒